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ABSTRACT

The Academic Learning Time in Physical Education (ALT-PE) instrument is a popular research tool for investigations of student engagement patterns in physical education settings. This study examined student engagement patterns in a large Canadian urban center measured with the 1982 version of the ALT-PE instrument in a variety of secondary physical education classes. A total of 119 lessons involving 28 different activities were observed. Data were analyzed according to grade level, gender, and activity groupings. The results suggest that teachers tend to set a favorable context for achieving motor learning goals by devoting high proportions of lesson time to subject matter (motor and knowledge) activities. However, student involvement in successful motor activities (MA) is disappointing. MA percentages range from 4 percent to 77 percent with an average of 33 percent. Wide differences in percentages for all observed behaviors were reported for activities. The challenge for teachers of secondary school physical education is to set a favorable context for motor learning and then to ensure that students remain involved with subject matter with a high degree of success. (Author/IAH)

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Canadian Secondary School P E Lessons - Class Context and Learner Involvement (ALT-PE)*

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*Portions of this paper have been published elsewhere.

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Abstract

The ALT-PE instrument is a popular research tool for investigations of student engagement patterns in physical education settings. This study examined student engagement patterns measured with the 1982 version of the ALT-PE instrument in a variety of secondary physical education classes. A total of 119 lessons involving 28 different activities were observed. Data was analyzed according to grade level, gender, and activity groupingss. The results suggest that teachers tend to set a favorable context for achieving motor learning goals by devoting high proportions of lesson time to subject matter (motor and knowledge) activities. However, student involvement in successful motor activities (MA) is dissapointing. MA percentages range from 4% to 77% with an average of 33%. Wide differences in percentages for all observed behaviors were reported for activities. The challenge for teachers of secondary school physical education is to set a favorable context for motor learning and then to ensure that students remain involved with subject matter with high degree of success.

Canadian Secondary School P E Lessons - Class Context and Learner Involvement (ALT-PE)

"What's going on in the gymnasium?" is not a new question. A number of observation systems have been designed to describe student use of time in physical education classes but the Academic Learning Time in Physical Education (ALT-PE) instrument is by far the most popular (Lee & Poto, 1988). The ALT-PE instrument provides a reliable measure of the amount of time students are successfully engaged with relevant motor activities (Siedentop, Tousignant, & Parker, 1982). It has been generally accepted that ALT-PE provides a theoretically sound perspective for studying student learning opportunities in psychomotor activities. Large sample studies using ALT-PE at the secondary school level are few (Grant, 1987). Results of these studies have indicated that students spend much of their physical education time in activities other than motor engaged at an appropriate level of difficulty (Beauchamp, Darst, & Thompson, 1990; Aufderheide, Olson, & Templin, 1980; Godbout, Brunelle, & Tousignant, 1983; Grant, 1983; Metzler, 1980). These findings have been made available to teachers during in-service workshops carried out by the authors. Invariably workshop participants are aghast at the low motor appropriate engagement (MA) times

reported. However, there often is an underlying feeling that although this is indicative of American schools, they often ask: What are students in Canadian schools doing? Replication of studies using ALT-PE is encouraged in order to build a knowledge base to address this question. The purpose of this study was to conduct an extensive descriptive study of secondary school physical education programs in a large Canadian urban center. The precise purpose of this study was to examine student participation behaviors in a variety of secondary physical education classes using the ALT-PE (1982) instrument.

Methods and Procedures

Subjects, Grades and Lessons Observed

The subjects for this study were randomly selected from 119 typical intact junior and senior high school physical education classes. A total of 356 secondary physical education students were observed. This sample comprised 74 junior high and 139 senior high male students (n=213) and 57 junior high and 86 senior high female students (n=143).

In the school districts studied, physical education is required in grades 7 through 10 and elective in grades 11 and 12. A total of 75 senior and 44 junior high lessons were observed. All teachers were experienced

secondary physical education specialists. Although some teachers were observed more than once, no teacher was observed teaching the same class twice. Thus, any given group of students was observed only once during the study.

Activities Observed

A total of 28 different activities were observed. Table 1 presents the breakdown of lessons observed by dimensions (activity groupings according to curriculum guidelines (Alberta Education, 1988), activity and grade level.

Insert Table 1 about here

Instruments

The ALT-PE instrument (Siedentop, Tousignant, & Parker, 1982) used for this study is two tiered and examines the context of the entire class as well as individual learner involvement. Figure 1 illustrates the behavior categories of the ALT-PE instrument. This instrument was modified slightly in that warm up behaviors that directly related to the motor goals of the lesson were coded as WU/MA. Thus, these behaviors were included in student motor engagement rates.

Insert Figure 1 about here

Data Collection

Data were collected by three trained observers who maintained above 85% IOA ratings prior to and throughout data collection. Live interval recording with a six second observation followed by a six second record format was used to code the behaviors of three randomly selected target students from each class observed. Observers used a prerecorded audiotape for cueing observe-record intervals. Coding of lessons started when the teacher formally began the class and ended when students were dismissed. Thus, time allotted for changing and pre and post class activities was not included.

Data Analysis

Coded behaviors were recorded on coding sheets and were transferred to an IBM-PC program specifically designed to determine raw score totals for the number of intervals as well as percentages of observed intervals for each behavior.

Average percentages for behavior categories were determined for separate activities (e.g., badminton) as well as the following groupings of activities by dimensions: aquatics, dance, fitness, games, gymnastics,

individual activities and outdoor pursuits (Alberta Education, 1988). Since this study was conducted in the spring of the year, it was not expected that all seven dimensions would be represented equally in the data. Data analysis also examined grade levels and teacher and student gender.

The emphasis for analysis was placed on the class CONTEXT set by the teacher for time devoted to SUBJECT MATTER MOTOR (SM MOTOR) learning, and the amount of time learners spent in MOTOR APPROPRIATE (MA) behaviors.

Results

The results provide average percentages for behavior categories for all lessons combined, gender and grade level groupings, activities grouped by dimensions, and individual activities. Since percentages are rounded off to the nearest whole number, totals may be slightly higher or lower than 100% for the context or learner involvement level.

All Lessons Observed

Table 2 presents the percentages for behaviors observed in all lessons. These results should be interpreted cautiously because of the wide variety of activities included. The class context provided opportunity to learn motor skills as 58% of the total observed instructional time was devoted to the SUBJECT

MATTER MOTOR activities and 13% to SUBJECT MATTER KNOWLEDGE activities (71% of the lesson context). Most of the context time was spent in PRACTICE (P=21%) and GAME or application of skills (G=25%).

Insert Table 2 about here

However, students were observed in MOTOR behaviors for only 42% of learner involvement time. Students spent 33% of their time on successful motor responses (MA). Very few motor responses were inappropriate (MI=1%). When students were NOT MOTOR ENGAGED, they were involved in COGNITIVE (C=21%) and WAIT (W=21%) activities. There was minimal OFF-TASK behavior (OF=2%).

Gender

Table 3 shows the percentages of observed behaviors for female and male students. The most striking result is the similarity of student MA percentages for both males and females (MA=33%). Although the MA percentages are the same, some differences were noted for the NOT MOTOR ENGAGED behaviors. For example, female students spent more time on COGNITIVE behaviors than did males (25% and 18% respectively). The males, however, spent more time in WAIT behaviors than did female students (24% and 16% respectively). Since only four lessons were

coeducational an analysis of teacher gender showed minimal differences as compared with student gender results.

The class context for motor skill learning was slightly different for classes of males and females. Classes for males emphasized SUBJECT MATTER MOTOR activities more than classes for females (59% and 55% respectively). Male classes emphasized FITNESS (F=32%) followed by PRACTICE (P=19%) and GAME behaviors (G=8%). The focus of female classes was primarily PRACTICE (P=23%) followed by GAME (G=15%) and FITNESS (F=13%) behaviors. In both male and female classes most behaviors in the GENERAL category were devoted to TRANSITIONS (T=16% and 17% respectively).

Insert Table 3 about here

Grade Level

Table 4 shows the percentages of observed behaviors by grades. In all cases, the MA percentages were higher at the senior high level. The MA percentages for junior high grades were 28%, 19% and 22% (grades 7, 8 and 9 respectively) and for senior high grades it was 35%, 38% and 44% (grades 10, 11 and 12 respectively). Junior high learners spent more time in COGNITIVE behaviors than did

senior high learners (C=28%, 26% and 34% for grades 7, 8 and 9 respectively; C=20%, 11% and 17% for grades 10, 11 and 12 respectively). A caution should be noted with regard to these results. Twenty nine lessons at the junior high level were track and field which provided among the lowest MA percentages of all activities observed.

The class context for motor learning opportunities was more favorable at the senior high level. The amount of lesson time devoted to SUBJECT MATTER MOTOR activities for junior high grades was 49%, 39% and 35% (grades 7, 8 and 9 respectively) and for senior high grades it was 61%, 70% and 70% (grades 10, 11 and 12 respectively).

Time devoted to behaviors not relating to subject matter goals (GENERAL) were observed more often at the junior high level (GEN=36%, 41% and 41% for grades 7, 8 and 9 respectively; GEN=26%, 22% and 18% for grades 10, 11 and 12 respectively). Time devoted to WARM-UP (13%, 14%, 14%, 7%, 7% and 2% for grades 7 through 12 respectively) and TRANSITIONS (20%, 25%, 23%, 16%, 14%, and 14% for grades 7 through 12 respectively) was also greater at the junior high level.

Insert Table 4 about here

Dimensions and Activities

Table 5 presents the percentages for observed behaviors in all seven dimensions (groupings based on related skills).

Insert Table 5 about here

Aquatics Dimension. The class context of lessons emphasized SUBJECT MATTER MOTOR activities (SM MOTOR=60%) and included a focus on the PRACTICE and GAME or application of skills (P=45% and G=15%). The lessons also provided time for gaining SUBJECT MATTER KNOWLEDGE (SM KNOW=17%) which was primarily focused on TECHNIQUE instruction (TN=16%). Some lesson time was spent on GENERAL behaviors unrelated to motor learning (GEN=22%) with most of this time observed as TRANSITIONS (T=18%). Learners were observed as MOTOR engaged for 38% of the lesson time and most of that time represented successful motor responses (MA=35%). When learners were NOT MOTOR ENGAGED they were observed in WAIT (28%) or in COGNITIVE behaviors (24%) most frequently.

Dance Dimension. The dance dimension consisted of two junior high jazz lessons. The learner successful motor responses are high (MA=54%). These dance lessons resulted in little time spent in TRANSITIONS (T=8%) and

WAIT (W=7%) behaviors. Overall, these two dance lessons provided opportunities for learners to be very actively engaged with the subject matter.

Fitness Dimension. Fitness lessons provided a favorable context for SUBJECT MATTER MOTOR learning (SM MOTOR=66%) and students demonstrated fairly high motor engagement rates (MOTOR=55%). When learners were NOT MOTOR ENGAGED they were observed in WAIT (W=15%) or COGNITIVE (C=20%) behaviors.

The fitness dimension was comprised of four types of activities. There was a more favorable context for SUBJECT MATTER MOTOR opportunities in the weight training and aerobics lessons (SM MOTOR=90% and 81% respectively) as compared with skip-its and general fitness lessons (SM MOTOR=59% and 43% respectively). Time spent in TRANSITIONS was also much lower for weight training (T=2%) and aerobics (T=8%) lessons compared to skip-its (T=14%) and general fitness (T=16%) lessons. The skip-its and general fitness lessons provided more time for TECHNIQUE or STRATEGY instruction (TN=18% and ST=25% respectively).

Students were observed in motor behaviors to a greater extent in aerobics lessons (MOTOR=81%; MA=77%). Learners were MOTOR ENGAGED less often in weight training, skip-its and general fitness lessons

(MOTOR=42%, 52%, and 32% respectively). Learners were observed in WAIT activities frequently in weight training, skip-its and general fitness lessons (W=37%, 16% and 19% respectively). In skip-its or general fitness lessons learners were observed in COGNITIVE behaviors frequently (29% and 34% respectively).

Games Dimension. Data from the games dimension indicated that a favorable class context for motor learning opportunities was presented through SUBJECT MATTER MOTOR (65%) and SUBJECT MATTER KNOWLEDGE (9%) activities. GAME play (G=46%) and skill PRACTICE (P=14%) received more attention than time sent on technique, strategy or rules. One quarter of lesson time was devoted to GENERAL activities unrelated to subject matter and much of that time was spent in TRANSITIONS (T=16%). Learners were observed in MOTOR activities for 45% of learner involvement time. Learners were observed in successful motor responses on appropriate tasks (MA) for 37% of the learner involvement time.

The games dimension was comprised of eleven different activities and most were at the senior high school level (49 of 55 lessons). Racquetball, curling and soccer activities devoted over three quarters of class context time to SUBJECT MATTER MOTOR learning opportunities (SM MOTOR=93%, 82% and 78% respectively).

However, only the racquetball lessons resulted in high rates of learner successful motor responses (MA=70%). In curling and soccer activities, successful motor engagement was lower (MA=30% and 53% respectively) mostly due to very high WAIT time (W=54% and 33% respectively).

In the eight other game activities observed, the class context for motor engagement opportunities ranged from 50% in team handball to 69% in volleyball. Time spent in GENERAL activities was highest in team handball (GEN=37%) and lowest in badminton and volleyball (GEN=24%). In all lessons this unproductive time was mostly due to high percentages of time for TRANSITIONS. For example, in floor hockey and ice hockey lessons the observed percentages for TRANSITIONS was 27% and 25% respectively. The learner MOTOR engagement percentages were fairly high in baseball and basketball activities (MOTOR=62% and 50% respectively). Successful motor responses were observed more frequently in baseball (MA=53%). High percentages of learner WAIT time were observed in ice hockey, low organization games, team handball and volleyball (W=36%, 29%, 25% and 23% respectively). Learners were observed in COGNITIVE activities frequently in floor hockey and team handball lessons (C=23% and 21% respectively). Learner successful

motor responses (MA) in the eight game activities are included in Figure 3.

Gymnastics Dimension. Gymnastics lessons emphasized SUBJECT MATTER MOTOR (57%) and SUBJECT MATTER KNOWLEDGE (14%) activities. However, time spent in GENERAL activities unrelated to the subject focus was quite high (GEN=29%) primarily due to time spent in TRANSITIONS (18%). The focus of the motor activities emphasized the PRACTICE of individual skills (P=49%). Learners were frequently involved in COGNITIVE (C=32%), WAIT (W=12%) and MOTOR engagement behaviors (MOTOR=38%). However, learners were observed in successful motor responses for only 24% of learner involvement time.

The gymnastics dimension was comprised of artistic and educational gymnastics lessons. Educational gymnastics lessons devoted twice as much time to SUBJECT MATTER KNOWLEDGE activities as compared with artistic gymnastics lessons (SM KNOW=23% and 12% respectively). Artistic gymnastics lessons devoted twice as much time to GENERAL activities unrelated to subject matter as compared with educational gymnastics lessons (GEN=33% and 16% respectively). It was also observed that learners were successfully engaged in motor responses three times more frequently in educational gymnastics compared with artistic gymnastics lessons (MA=46% and 17%

respectively). Learners were off task more frequently in artistic gymnastics (OF=9% compared with 0%). Learner involvement in WAIT and COGNITIVE behaviors was similar for artistic and educational forms of gymnastics (W=13%and 12%; C=31% and 36% respectively).

Individual Activities Dimension. All lessons in the individual activities dimension were observed at the junior high level. The results show that as a group of lessons, the class context for SUBJECT MATTER MOTOR learning opportunities is not emphasized (SM MOTOR=33%) and time devoted to GENERAL activities unrelated to subject matter is high (GEN=44%). There was some time spent on SUBJECT MATTER KNOWLEDGE (SM KNOW=21%) with most activities devoted to TECHNIQUE instruction (TN=15%). Learners were observed in MOTOR activities 30% of the lesson time, however, successful motor responses were low (MA=14%). When not engaged in motor behaviors, learners spent their time primarily in COGNITIVE and WAIT activities (C=31% and W=25%).

Most lessons in the individual activities dimension lessons were comprised of several track and field activities going on at one time (15 lessons). Other lessons were devoted to a specific type of track and field event (14 lessons). The activity providing the most opportunity for SUBJECT MATTER MOTOR learning

opportunities was high jump (SM MOTOR=61%). However, learners were observed in MOTOR engagement activities only 12% of the learner involvement time and in successful motor responses (MA) for only 9% of the lesson time in high jump lessons. Learners were observed in WAIT and COGNITIVE activities frequently in high jump lessons (W=50% and C=29%).

Lesson context time devoted to GENERAL activities unrelated to subject matter was highest in lessons involving running and pacing activities (GEN=72% and 70% respectively). These activities also had the highest percentages of time spent in TRANSITIONS (T=53% for running and 46% for pacing). Learner involvement in successful motor responses was observed infrequently in pacing and running lessons (MA=6% and 4% respectively). Learners spent most of their time in WAIT or COGNITIVE activities in pacing (W=26%, C=40%) and running (W=42%, C=23%) lessons.

Another activity resulting in a very low learner MA percentage was the shot put lesson (MA=9%). Lessons on relay, combined events and hurdles resulted in slightly higher learner successful motor responses (MA=19%, 19% and 13% respectively). Once again, learners spent more time in WAIT and COGNITIVE activities than motor responses for hurdles, relay and combined event lessons

(W=17%, 13%, 19% respectively and C=34%, 38%, 30% respectively).

The time devoted to WARM UP directly related to motor objectives was observed frequently except for the high jump lesson (WU/MA=23% for relay, 18% for hurdles, 17% for combined events, 16% for running, 12% for pacing and shot put, and 3% for high jump). Warm up activities unrelated to lesson objectives was minimal.

Outdoor Pursuits Dimension. The outdoor pursuits dimension, which was comprised of two canoeing lessons, provided SUBJECT MATTER MOTOR (47%) and SUBJECT MATTER KNOWLEDGE (31%) activities. The motor activities involved the PRACTICE of skills (P=47%). Learners were involved in MOTOR engagement behaviors 34% of the lesson time and were observed responding successfully to appropriate motor tasks (MA) 28% of the lesson time. When not engaged in motor behaviors, learners were primarily involved in COGNITIVE activities (C=36%). WAIT and preparing to start activity (ON) was observed for 19% and 10%, respectively, of learner involvement time.

Figure 2 presents the observed percentages of successful motor responses on relevant tasks (MA) for learners in each of the 28 different activities. The range for MA percentages is from 4% to 77% of the total lesson time. In certain fitness, games and dance

activities learners were very active in motor learning activities (aerobics, jazz dance, and racquetball, baseball and soccer) as they were observed in successful motor responses (MA) for over 50% of the lesson time. In most individual activities (track and field) learners were observed in successful motor responses (MA) for less than 20% of the lesson time. Most activities within dimensions show a great deal of variation in MA percentages.

Insert Figure 2 about here

Discussion

This study found considerable differences in percentages of observed behaviors for each dimension (grouping of activities) and for each separate activity. For example, student MA percentages ranged from 4% to 77% for various activities with an average of 33% for all lessons combined. Within the fitness dimension the range of MA was 35% to 77% and within the games dimension it was from 29% to 70%. Likewise, student time spent in COGNITIVE behaviors ranged from 1% to 40% with an average of 21% for all lessons. Student time spent in WAIT activities ranged from zero to 54% with an average of 21% for all lessons. Thus, even though activity groupings

(dimensions) used in this study were based on related skills, the data suggest the importance of each activity being analyzed separately for discussion purposes. Previous research has indicated a wide range of percentages for various curriculum content areas and activities (Grant, 1987; Metzler, 1989).

Overall, the results of this study suggest that the class context was favorable for achieving motor learning objectives in secondary school physical education, with the exception of the individual activities dimension (track and field). In this study it was found that the context set for SUBJECT MATTER MOTOR activities was more than half of the total lesson time with an average of 58% for all lessons. The average time spent on SUBJECT MATTER KNOWLEDGE was 13%. Thus, the lessons observed in this study placed an emphasis on motor activities over knowledge content. The primary type of motor activity observed in this study was the PRACTICE of individual skills except for the games dimension in which GAME play was the main focus and in the fitness dimension FITNESS activities dominated. There was an obvious lack of SCRIMMAGE type activities throughout all lessons. This observation raises some questions about the apparent lack in the use of progressions from the practice of individual skills to the practice of combinations

(scrimmages) and then application of skills (games). The use of teaching moments in controlled scrimmages is useful to increase practice opportunities in game-like conditions (Metzler, 1990b). It has been reported that game play does little to increase the performance level of students (Buck & Harrison, 1990). Scrimmage type activities are those in which teacher intervention occurs frequently as students practice combinations of actions. Game activities involve student application of skill learning typically found in proficient performance with minimum teacher intervention.

In most activities the teacher spent less than one-third of the lesson time on GENERAL activities (unrelated to subject matter content, G=28%). Thus, approximately three quarters of lesson time was devoted to subject matter content through motor activities or the gaining of knowledge. One type of behavior which detracted from a more favorable physical education context involved time devoted to TRANSITIONS. Time spent in TRANSITIONS ranged from 2% to 53% with an average for all lessons of 17%. One could question the effectiveness of teachers who devote more than one quarter of lesson time for the changing of activity (Metzler, 1989). Since transitions are expected to occur in physical education lessons, then the challenge for teachers is to ensure a reasonable

balance of time spent on those behaviors with the amount of time devoted to subject matter activities. In order to learn, students must be engaged with the subject matter (Metzler, 1990a).

Learner involvement is partially a function of teacher instructional decisions. However, rarely did learners take full advantage of the context established for achieving lesson motor learning objectives in this study. The results revealed that in only three activities were learners MOTOR engaged to an extent that matched the context set for SUBJECT MATTER MOTOR activities. In most activities learner motor engagement rates were lower than the context set for motor involvement. In previous research it has been reported that not all students use lesson time available for acquisition of motor skills (Godbout, Brunelle, & Tousignant, 1983). Exactly why this occurs so frequently in physical education lessons warrants further study in order to establish guidelines for effective teaching.

In only 7 of the 28 activities were learners observed in MOTOR behaviors more than 50% of the lesson time despite the favorable context set. For all activities the average percentage of time in MOTOR engagement behavior was 42%. Correspondingly, in only five activities were learners observed in successful

motor responses (MA) for more than half the lesson time. Learners were far more frequently observed in NOT MOTOR ENGAGED behaviors (56% of lesson time). The average percentage of time spent in NOT MOTOR ENGAGED behaviors for all lessons was 56% of lesson time. It is obvious that learners are not as involved in successful motor responses as might be desired according to the context set. Also, learners in secondary physical education lessons are more often engaged in behaviors that do not involve motor output of any kind.

Learners were often observed in waiting when not engaged in motor responses. Observed percentages for WAIT activities amounted to more than one-third of the lesson time in 6 activities and the average WAIT time was 21% of lesson time. This study found the highest wait time in curling and high jump lessons and the lowest in dance, aerobics and racquetball lessons. The time spent waiting is considered non productive to achieving lesson goals. Although percentages of time spent waiting can be low in physical education lessons, it is obvious that this seems difficult to achieve as it was observed that many secondary physical education students have high percentages of wait time.

Learners were involved in COGNITIVE behaviors for more than one-third of the lesson time in 5 activities.

The average percentage of time spent in COGNITIVE behaviors for all lessons was 21% of the lesson time. One could argue that learner involvement in cognitive behavior enhances motor skill achievement especially in the early stages according to models of motor skill learning (Lee & Poto, 1988). More extensive research should be conducted to determine the extent that high percentages of time spent in cognitive behavior helps motor skill learning. Research has yet to identify a strong relationship between time students spend in cognitive behaviors and motor skill achievement (McLeish, 1985; Silverman, 1983; Yerg, 1981). The reader is reminded that cognitive behaviors in this study were those that did not involve motor response on the part of the learner. Learners tended to be listening to instruction or watching a demonstration. Thus, the relationship between cognitive and motor engagement behaviors is extremely complex and more research attention should be devoted to determine the appropriate balance for learners. The amount of teacher talk time (e.g., instructions) detract from student motor engagement time. Teachers must be aware of how much time is spent with learners inactive while they provide instruction.

A coding convention used in this study involved coding learners as engaged in motor appropriate responses during warm up activities if the warm up was structured in such a way as to involve appropriate subject matter skills (WU/MA). In track and field learners were more often, or as frequently involved, in motor appropriate warm up as compared to other motor appropriate responses. Overall, track and field lessons had the lowest motor appropriate responses of all activities observed (MA=14%). Since most of the motor activities seemed to be warm up, one could question the real value of the track and field lessons observed in this study for actual skill improvement. In all other activities teachers did not tend to devote a lot of time to warm up activities but they did tend to contribute to the motor learning objectives of lessons.

This study has extended the available information on student use of time in Canadian secondary physical education lessons for a wide variety of activities. The results have pointed to the need to examine the teaching of some activities for ways to increase student successful motor responses (MA). The results suggest that teachers tend to set a favorable class context for achieving motor learning goals with an emphasis placed on activities for motor engagement opportunities. However,

students in physical education lessons rarely actualize that opportunity through low percentages of successful motor responses (MA). Teachers provide a major influence in establishing the class context for time devoted to activities involving the subject matter (Metzler, 1990a; Rink, 1985).

The use of systematic observation has drawn attention to aspects of lessons that teachers may overlook while conducting lessons. The context of lessons devoted to transitions is an aspect of instructional time teachers should try to minimize as this time does not directly relate to motor learning goals. Also, student time spent waiting should be reduced in order to increase motor response potential. Little off task behavior was observed at the secondary level and this suggests that wait time was due to organizational problems. Time devoted to cognitive behaviors is a complex issue. The balance between cognitive and motor behavior needs to be studied in order to determine the best mix for different learners and activities. At this point in time one can speculate that too much teacher talk time is detracting from student practice time. The focus of games lessons which emphasized game play but very little scrimmage activities suggests a need to examine games teaching. Since only

three game activities resulted in student MA percentages above 50% one can question the use of game play rather than the typically smaller group scrimmage activities. The teaching of track and field events has been called into serious question as a result of this study because of the extremely low motor response percentages observed in all lessons.

Conclusion

It has been generally accepted that ALT-PE variables form a theoretically sound perspective for the study of student learning opportunities in psychomotor activities (Siedentop, Tousignant, & Parker, 1982). Descriptive studies to date have indicated that students spend far less time on successful motor engagement behaviors (MA) in physical education lessons than had been imagined (Metzler, 1989). The results of this study support the premise that much student time in physical education lessons is spent in NOT MOTOR ENGAGED activities. The physical education class provides a unique environment for students to develop skills in the motor domain. In order to learn, students must be engaged with the subject matter (Metzler, 1990a). Overall, this study found a favorable class context for the achievement of motor learning objectives. Teachers provide a major influence in establishing the context for SUBJECT MATTER MOTOR and

SUBJECT MATTER KNOWLEDGE activities. However, learner involvement in MOTOR engaged activities in this study is dissapointing. Teachers need to encourage students to be more actively involved with the subject matter. The challenge is to set a favorable context for learning to take place and then ensure that students remain on-task and successfully engaged with the subject matter. Teachers tend to plan and implement lessons based on whole-class activities. Effective teachers are aware of how they plan class time as well as how students actually use time in class (Metzler, 1990a). Less effective teachers are not aware of motor-on-task behavior of their students (Grant, Ballard, & Glynn, 1989). It is important for teachers to monitor students to find evidence of effective teaching and learning in physical education (Metzler, 1990a).

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Table 1. Lessons observed by dimension, activity and grade level

DIMENSION	ACTIVITY	NUMBER OF LESSONS AT GRADE LEVEL	
		Jr. High	Sr. High
Aquatics	Swimming		7
	Snorkeling		1
Dance	Jazz	2	
Fitness	Aerobics		5
	General Fitness	2	3
	Skip-Its	2	
	Weight Training		2
Games	Badminton	1	17
	Baseball	1	
	Basketball		3
	Curling		6
	Floor Hockey	1	2
	Ice Hockey		9
	Low Organizational Games	2	1
	Racquetball		1
	Soccer		2
	Team Handball	1	2
	Volleyball		6
Gymnastics	Artistic		6
	Educational	3	
Individual Activities	Combined T & F	15	
	High Jump	4	
	Hurdles	6	
	Pacing-Distance	1	
	Relay	1	
	Shot Put	1	
	Sprinting	1	
Outdoor Pursuits	Canoeing		2
	TOTAL	44	75

Table 2. Percentages for observed behaviors in all junior and senior high lessons (n=119)

CLASS CONTEXT

GEN 28%				SM KNOW 13%				SM MOTOR 58%			
T	M	B	WU	TN	ST	R	BK	P	S	G	F
17	2	1	9	7	4	1	1	21	2	25	11

LEARNER INVOLVEMENT

NOT MOTOR 57%					MOTOR 42%			
I	W	OF	ON	C	WU/MA	MA	MI	MS
7	21	2	6	21	8	33	1	1

Table 3. Percent occurrence of ALT-PE categories for male and female students (n=356)

Behavior Categories		Male (n=213)	Female (n=143)
General Content (Total)		27	29
Transition	T	17	16
Management	M	2	2
Break	B	0	1
Warm-up	WU	8	10
Subject Matter Knowledge (Total)		12	15
Technique	TN	6	9
Strategy	ST	5	3
Rules	R	1	2
Social Behavior	SB	0	0
Background	BK	1	1
Subject Matter Motor (Total)		59	55
Skill Practice	P	19	23
Scrimmage	S	0	4
Game	G	8	15
Fitness	F	32	13
Not Motor Engaged (Total)		57	55
Interim	I	7	8
Waiting	W	24	16
Off-task	OF	2	1
On-task	ON	7	5
Cognitive	C	18	25
Motor Engaged (Total)		41	44
Warm-up Motor Appropriate	WU/MA	7	9
Motor Appropriate	MA	33	33
Motor Inappropriate	MI	0	1
Motor Supporting	MS	1	1

Table 4. Percent occurrence of ALT-PE categories for grade levels

Behavior Categories		Grade					
		7	8	9	10	11	12
Number of Classes		(12)	(11)	(17)	(44)	(17)	(14)
General Content (Total)		36	41	41	26	22	18
Transition	T	20	25	23	16	14	14
Management	M	1	2	2	2	1	2
Break	B	2	1	1	0	0	0
Warm-up	WU	13	14	14	7	7	2
Subject Matter Knowledge (Total)		15	16	22	13	8	12
Technique	TN	13	11	17	5	3	7
Strategy	ST	0	4	0	4	5	4
Rules	R	1	1	0	3	0	1
Social Behavior	SB	0	0	0	0	0	0
Background	BK	1	1	4	1	0	0
Subject Matter Motor (Total)		49	39	35	61	70	70
Skill Practice	P	23	29	26	20	13	20
Scrimmage	S	0	0	1	3	3	0
Game	G	22	4	4	10	14	14
Fitness	F	5	5	5	29	41	35
Not Motor Engaged (Total)		57	63	64	56	54	52
Interim	I	5	5	3	8	9	9
Waiting	W	20	26	21	18	26	19
Off-task	OF	1	1	1	2	1	1
On-task	ON	3	5	5	7	6	7
Cognitive	C	28	26	34	20	11	17
Motor Engaged (Total)		41	33	34	44	45	48
Warm-up Motor Appropriate	WU/MA	12	13	11	7	6	2
Motor Appropriate	MA	28	19	22	35	38	44
Motor Inappropriate	MI	1	0	1	1	1	1
Motor Supporting	MS	0	0	0	1	0	0

Table 5. Percent occurrence of ALT-PE categories for seven dimensions of activities

	Behavior Categories Number of Classes		All Lessons (119)	Dimensions Aquatics (8)	Dance (2)	Fitness (14)	Games (55)	Gymn. (9)	IA (29)	OP (2)
	General Content (Total)		28	22	27	19	25	29	44	22
CLASS CONTEXT	Transition	T	17	18	8	11	16	18	23	17
	Management	M	2	2	0	1	2	2	3	1
	Break	B	1	0	0	1	0	0	1	0
	Warm-up	WU	9	2	10	5	7	9	17	4
	Subject Matter Knowledge (Total)		13	17	10	15	9	14	21	31
	Technique	TN	7	16	4	4	3	14	15	21
	Strategy	ST	4	1	6	9	3	0	3	10
	Rules	R	1	0	0	0	3	0	0	0
	Social Behavior	SB	0	0	0	0	0	0	0	0
	Background	BK	1	0	0	1	0	0	3	0
	Subject Matter Motor Total		58	60	62	66	65	57	33	47
	Skill Practice	P	21	45	39	8	14	49	25	47
	Scrimmage	S	2	0	7	0	2	6	0	0
	Game	G	25	15	6	0	46	0	1	0
	Fitness	F	11	0	11	58	3	2	7	0
LEARNER INVOLVEMENT	Not Motor Engaged (Total)		57	62	30	44	55	62	66	66
	Interim	I	7	2	4	2	11	5	4	0
	Waiting	W	21	28	7	15	22	12	25	19
	Off-task	OF	2	1	0	1	1	7	1	1
	On-task	ON	6	6	0	6	7	7	5	10
	Cognitive	C	21	24	19	20	14	32	31	36
	Motor Engaged (Total)		42	38	69	55	45	38	30	34
	Warm-up Motor Appropriate	WU/MA	8	2	14	5	6	9	15	3
	Motor Appropriate	MA	33	35	54	49	37	24	14	28
	Motor Inappropriate	MI	1	1	1	0	0	2	1	1
	Motor Supporting	MS	1	0	0	1	0	3	0	1

Figure 1. Academic learning time in physical education behavior categories (1982) *

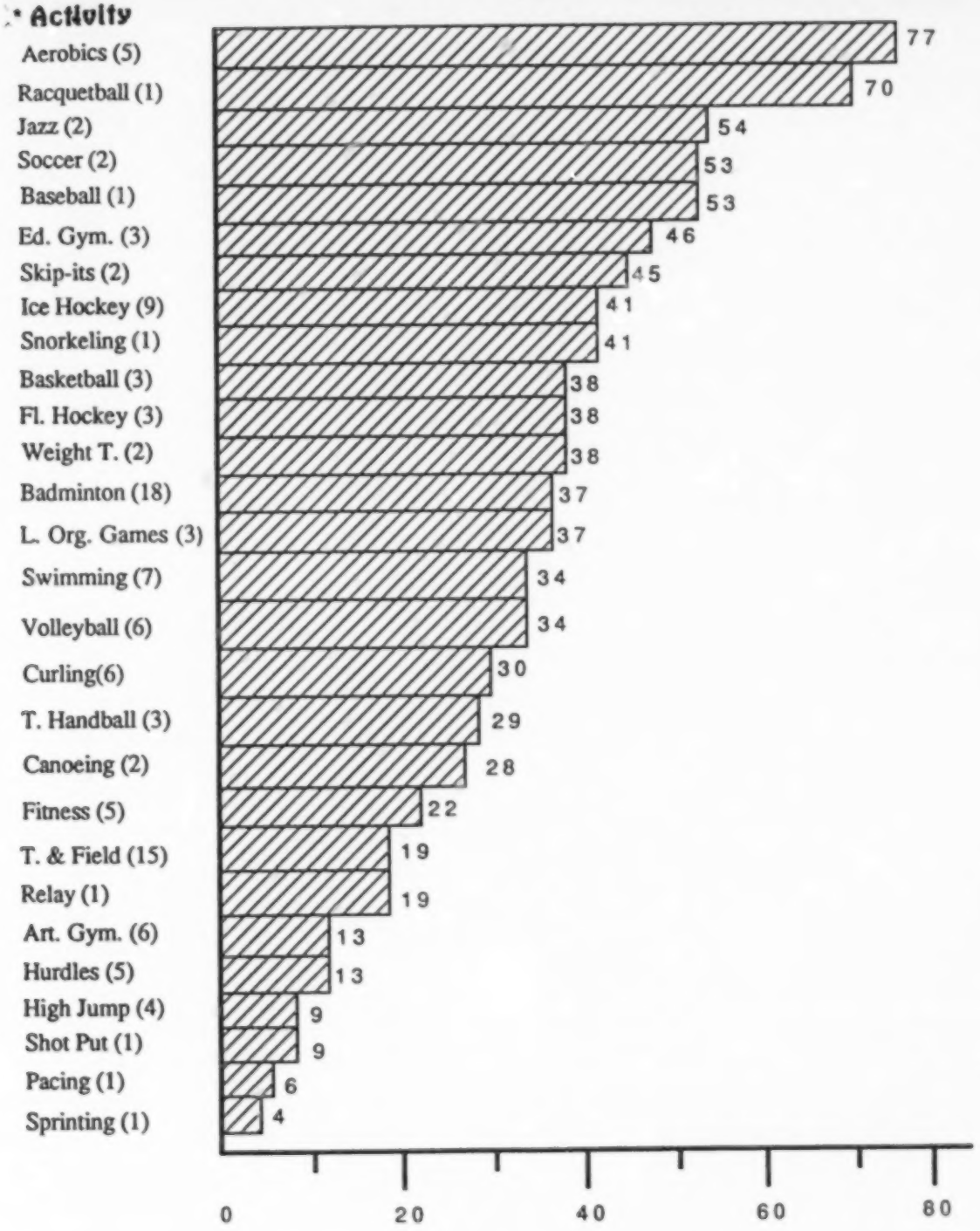
CLASS CONTEXT

GENERAL	SUBJECT MATTER KNOWLEDGE	SUBJECT MATTER MOTOR
Transition - T	Technique - TN	Skill Practice - P
Management - M	Strategy -ST	Scrimmage or Routine - S
Break - B	Rules - R	Fitness - F
Warm Up - WU	Social Behavior - SB	Game - G
	Background - BK	

LEARNER INVOLVEMENT

NOT MOTOR ENGAGED	MOTOR ENGAGED	
Interruption - I	Motor Appropriate (Success)	- MA
Waiting - W	Motor Inappropriate (Too esay/hard)	- MI
Off Task - OF	Motor Support (Assisting)	- MS
On Task - ON		
Cognitive - C		

* Siedentop, D., Tousignant, M., & Parker, M. (1982). Academic learning time -- Physical education: Coding Manual, 1982 Revision. Columbus: The Ohio State University, School of Health, Physical Education and Recreation.



* The number of lesson observed by each activity is shown in brackets

FIGURE 2. ALT-PE percentages for secondary school physical education lessons.